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CS 202 - 1101

Project 3 Documentation

**Purpose:** The purpose of this project is to design a program that can be able to take information from a file and manipulate it into classes and structures. The program is supposed to have aspects of multiple files, a functional menu, and array manipulation. The program uses structures, classes, and pointers to get information from the file and be able to print it to the terminal or singling out the cheapest option that is available. The project also involves makefiles to make compiling easier. The program is also supposed to be able to give an estimate for the price of renting a car and reserve a car.

**Design:** The program utilizes four header files and four source files. The main function is inside the proj3.cpp file. Most of the program is inside the menu source file and the menu function is called by the main function. The menu source file has five additional functions along with the menu function. These functions are prototyped in the menu header file. The readCars function uses a class method to take information from a file and place it into the class arrays. The printAgenciesToTerminal function uses a class method to print out all the information that is in the class arrays. The estimateRentalCost function gets user input to select an index for the agency and the car and select the amount of days. Based on the amount of days, the picked car’s price is multiplied by the days to give the total estimated price. The reserveCar function gets user input to select an index for the agency and the car. It then checks if the car is available, then “reserves” it for the user and changes the availability from true to false. Everything that requires an array is accessed through pointers and pointer arithmetic. The my\_string source file contains the functions that allow for string copying, string comparing, checking string length, and string concatenation. The my\_string header file holds the prototypes of each of the string functions. The RentalCar header file holds the class RentalCar and holds all the method prototypes and constructors. The source file defines the constructor and what values are in it while also implementing the getters/setters methods. It also holds the implementations to get information from a file, printing the information to the terminal, and estimating price. The agency file only holds the definition of the RentalAgency structure. The program is supposed to use the functions from the other files to compile together and run properly. A makefile was made to make the compilation process of the program easier.

**Problems/Challenges:** Some difficulties I had were with how pointers were read and used by the functions. Sometimes the pointer would point to wrong objects and not show the right values. I had difficulties in setting up the make file as I had never done it before and I did not know the specifics of making one. I used videos to see how to use the make command in the terminal to use my makefile to compile everything. I also had difficulties when I tried to access the zip code array in the RentalAgency structure. Since it was an integer array in a structure, I had to get the zip code from the file to a separate variable and place it into the array. I also had trouble with the classes and class methods not working properly. After looking at classes online, I was able to find my problems such as not forgetting to use the :: operator in implementing methods.

**Possible Changes:** If I had more time, I would clean up the code a little more and adjust it so that it works better. I would also see how classes function better and how to manipulate the methods inside in a simpler and easier way. I would also look at more class constructors and method implementations to get a better understanding of it.